



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,847	10/20/2003	Robert A. August	NC 84,355	7110
26384 7590 02/27/2007 NAVAL RESEARCH LABORATORY ASSOCIATE COUNSEL (PATENTS) CODE 1008.2 4555 OVERLOOK AVENUE, S.W. WASHINGTON, DC 20375-5320			EXAMINER MALEVIC, DJURA	
			ART UNIT 2884	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	02/27/2007	PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/693,847

Applicant(s)

AUGUST ET AL

Examiner

Djura Malevic

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-38, 40, 41, 45-48 and 50-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8, 10-38, 40, 41, 45-48, 59, and 60 is/are allowed.
- 6) ☒ Claim(s) 50-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 April 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 01/26/2007.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION**Continued Examination Under 37 CFR 1.114**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/26/2007 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 51, 52 and 55 - 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Hossain et al. (US Patent 6,075,261).

With regards to claims 52, Hossain discloses a neutron detection device (Fig 1a –1e) comprising an active semiconductor layer including a plurality of charge-sensitive cells 103; and a neutron conversion layer 121 located adjacent, in contact or in close proximity to said cells which is located within a distance from the said active semiconductor no greater than the range of neutron reactant product particles traversing the distance. Note, Hossain discloses that the insulating layer 119 is optional,

Art Unit: 2884

thus disclosing the said conversion layer 121 adjacent and in contact with said active semiconductor layer (Col. 2, Line 59 – Line 61).

With regards to claim 52, Hossain discloses an insulating layer 119 between the active semiconductor layer and the neutron conversion layer (Col. 2, Line 60) (Claim 23).

With regards to claims 55, and 58, Hossain discloses that suitable neutron-reactive elements include Boron and Lithium (Col. 3, Line 2).

With regards to claim 56, Hossain discloses that the conversion layer comprises Borophosphosilicate glass (BPSG) (Col. 3, Line 9 – Line 11).

With regards to claim 57, Hossain discloses Borophosphosilicate glass (BPSG) (Col. 3, Line 9), which comprises 5 percent boron.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 53, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hossain in view of Brandl et al. (US Pub. 2005/0067695 A1).

With regards to claims 53, and 54, Hossain discloses the invention according to claim 1, but does not expressly disclose a barrier layer located between the neutron conversion layer and the active semiconductor layer. Brandl discloses that a barrier

Art Unit: 2884

layer is formed between the integrated circuit and the metal layer (between the neutron conversion layer and the active semiconductor layer), which prevents diffusion of atoms from the metal layer (lithium) into the integrated circuit (semiconductor layer) [0019].

Brandl also discloses that the barrier layer may be made of silicon nitride, which limits dispersion of atoms of the metal layer into the sensor element [0045]. Thus, it would have been obvious at the time the invention was made to modify Hossain to include a barrier layer such as that taught by Brandl in order to prevent diffusion of atoms from the metal layer (i.e. lithium) into the integrated circuit (semiconductor layer) [0019].

Allowable Subject Matter

Claims 1 – 8, 10-38,40,41,45-48,59 and 60 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The prior rejection on record filed 07/28/2006 addressed the reasons for allowance for claims 1 – 8, 10-38,40,41,45-48,59 and 60.

Response to Arguments

Applicant's arguments filed 01/26/2007 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "projected range") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Art Unit: 2884

Additionally, the given parameters (i.e. .05 microns or less if the passivation is not included) (see Col. 4, Line 66 to Col. 4, Line 5) and the fact that those skilled in the art appreciate that the typical range of neutron reactant product particles (i.e., alpha particles) is on the order of tens to hundreds of microns, the neutron conversion layer is inherently located within a distance no greater than the range of neutron reactant particles.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The declaration faxed on 7/14/2006 would also be sufficient to overcome the non-patent literature filed with the IDS (01/26/2007).

This is a *continuation* of applicant's earlier Application No. 10/6093847. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 2884

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Djura Malevic whose telephone number is 571.272.5975. The examiner can normally be reached on Monday - Friday between 8:30am and 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Djura Malevic
Patent Examiner
Art Unit 2884



ALBERT J. GAGLIARDI
PRIMARY EXAMINER